

Serial No.: 10/708,213
Confirmation No.: 2212
Applicant: LINGMAN, Peter *et al.*
Atty. Ref.: 00173.0050.PCUS00

AMENDMENTS TO THE SPECIFICATION:

Please amend the following paragraphs in the Specification as follows:

[0003] The invention relates to a method for estimating the mass of a vehicle which is being driven on a road with a varying gradient ~~according to the preamble to claim 1~~. The invention also relates to a method for estimating the gradient of the road on which the vehicle is being driven ~~according to the preamble to claim 13~~. In particular, it relates to a method for simultaneously estimating the mass and the gradient of the road on which the vehicle is being driven.

[0011] This object is achieved by a method for estimating the mass of a vehicle ~~according to the characterizing part of claim 1~~. By using a calculating device within which a recursive process generates an estimate of the weight of the vehicle by utilizing a statistical filter utilizing input data comprising the vehicle's speed and a parameter which comprises a horizontal force acting on the vehicle, the mass of the vehicle can be determined with good convergence utilizing a statistical representation of a road with varying gradient.

[0012] This object is also achieved by a method for estimating the gradient of the road on which a vehicle is being driven, ~~according to the characterizing part of claim 13~~. By utilizing a calculating device within which a recursive process generates an estimate of the gradient of the road on which a vehicle is being driven by the utilization of a statistical filter utilizing said input data comprising the vehicle's speed and a parameter which comprises a horizontal force acting on the vehicle, the road's gradient can be determined with good convergence utilizing a statistical representation of a road with varying gradient.

[0047] By using the input signal $a(t)$ from an accelerometer, the estimation of the gradient of the road on which the vehicle is being driven can be carried out without direct connection to the mass of the vehicle. The vehicle's mass can therefore be estimated simultaneously by utilizing the control force $f(t)$ according to the above, by the relationship $a(t) = f(t)/m$. This means that when the input signal from an accelerometer is used, the estimation problem can be divided between

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two separate filters, a kinematic filter without equation of motion for estimating the gradient of the road and a dynamic filter concerning the mass.

[0098] According to a second embodiment of the invention, the recursive process generates updated approximations of the gradient of the road. This is carried out according to the second embodiment in a third method step 130'130", which is identical to the third method step in the first embodiment, except that the state corresponding to the gradient of the road constitutes the state which is of interest. As the gradient of the road constitutes a state which is included in the recursive process, according to the second embodiment of the invention, the recursive process generates updated approximations of the gradient of the road.